

Enbridge Line 5 Question is it Radioactive Impregnated with Norm's Normal Occurring Radio Active Material
Ask your local oil Supplier if He Knows about NORMS

Naturally-Occurring Radioactive Materials (NORM)

All minerals and raw materials contain radionuclides of natural origin. The most important for the purposes of radiation protection are the radionuclides in the U-238 and Th-232 decay series.

Excluding uranium mining and all associated fuel cycle activities, industries known to have NORM issues include:

The coal industry (mining and combustion)

- The oil and gas industry (production)
- Metal mining and smelting
- Mineral sands (rare earth minerals, titanium and zirconium).
- Fertiliser (phosphate) industry
- Building industry
- Recycling

And now We look at Line Five

What is Enbridge Line 5?

Enbridge's Line 5 is a 645-mile, 30-inch-diameter pipeline that travels through Michigan's Upper and Lower Peninsulas, originating in Superior, Wisconsin, and terminating in Sarnia, Ontario, Canada. Products moved on Line 5 heat homes and businesses, fuel vehicles, and power industry in the state of Michigan.

Built in 1953 by the Bechtel Corporation to meet extraordinary design and construction standards, the Line 5 Straits of Mackinac crossing remains in excellent condition, and has never experienced a leak in more than 60 years of operation.

Approach to safety and emergency response

In 2014, Enbridge held 371 drills, exercises, and equipment deployments across their company to boost its emergency response preparedness;

From 2012 to 2014, Enbridge invested more than \$74 million in equipment and training to improve their overall emergency preparedness and response capacity;

Enbridge's state-of-the-art Pipeline Control Center provides continuous monitoring and control of liquids pipelines across North America—24 hours a day, 365 days a year—using both human and automated resources; and

Enbridge has launched a state-of-the-art, online interactive training program to help emergency responders and 9-1-1 call center personnel quickly and effectively respond to a pipeline emergency.

Changes since Marshall

Since 2012, Enbridge has spent \$3.78 billion on maintenance, inspection, and leak detection across crude oil pipeline system;

Enbridge has added staff and enhanced organizational structures at Control Center Operations (CCO);

Specifications for pipeline steel exceed industry demands (minimum of .812 inches thick);

From 2012 through 2014, Enbridge invested more than \$74 million in equipment and training to improve overall emergency preparedness and response capacity;

Enbridge's Emergency Responder Education Program, another facet of their public awareness outreach, offers free unlimited online training and pipeline emergency response tactics for first responders near their projects and operations.

Design and construction

In 1953, Enbridge's Line 5 Straits of Mackinac crossing was built to extraordinary standards, using the finest engineering expertise from across the United States.

Bechtel Corporation—one of the most respected firms in the world, with the Hoover Dam among its achievements—managed the engineering, procurement, and construction of the pipeline;

Key safety features in the design of the twin pipelines included:

- Specially manufactured steel, formed from a molten “billet” to produce seamless piping;
- Heavier-walled pipe—at a minimum of 0.812 inches, this is much thicker than required by the line’s operation or today’s regulators and is the thickest pipe in the entire Enbridge system;
- An external coating of fiber-reinforced enamel, recognized as one of the most robust pipeline protection materials, protecting the pipe from water corrosion.

What would we lose?

The light oil transported by Line 5 feeds the Michigan economy with enough gas to fill 120,000 passenger cars and light-duty vehicles a day, enough diesel to fill 900 semi-trailers a day, and enough jet fuel to move 18,500 airline passengers a day;

About 30 percent of the light crude on Line 5 stays in the state, where it powers industry and is refined into gas, diesel, jet fuel, and other products;

Line 5 delivers 85 percent of the propane that heats Upper Peninsula and northern Michigan homes;

Since it entered service, Line 5 has transported about 80 million barrels of Michigan-produced light sweet crude to refineries in the region;

Line 5 does not carry, and has never carried, heavy crude;

If Line 5 were taken out of service, the direct impacts to Michigan's economy would include a loss of 2,000 bpd;

About 24,000 of the 320,000 Michigan homes heated by propane would be affected;

Marathon's Detroit refinery would also lose direct access to about 33,000 bpd of crude oil, or 28 percent of its refining needs;

That would mean an extra 177 fuel transport trucks and 11 propane trucks per day on Michigan's roads, or an extra 65 to 73 cars per day on Michigan's rails, required to pick up the slack; and

Would result in the loss of about 56,000 bpd of available crude supply, and 15,000 bpd of available propane, from the Michigan economy.

Inspections

Enbridge regularly examines their entire pipeline system from the inside out, they use inline inspection tools which run through the pipe and examine it from the inside, inch by inch;

Enbridge uses expert divers, Remote Operating Vehicles (ROVs), and an Automated Underwater Vehicle (AUV);

Their sophisticated inline inspection tools use imaging technology, with a level of detail similar to that of MRIs, ultrasound and X-ray technology in the medical industry, to scan pipelines on an inch-by-inch basis;

Enbridge regularly inspects the Line 5 Straits of Mackinac crossing using expert divers who examine and report on the condition of the Line 5 crossing and its underwater supports; and

Enbridge has also partnered with Michigan Technological University to test and enhance an Autonomous Underwater Vehicle (AUV) that maps the bottom of the Straits near the Line 5 crossing—and will help complement and validate the information gathered by the ROVs.

Safety

Line 5 is fixed in place to the lake bed with a sturdy screw-anchor support system consisting of 124 underwater anchors;

In 2014, to further promote safety at the Line 5 Straits crossing, Enbridge strengthened the line's mechanical support system by completing the installation of 40 additional screw-anchor supports;

These 10-foot-long steel screws are augered into the lake bed on either side of the parallel lines, and hold a steel saddle that permanently supports the lines; and

In 2011, Enbridge opened a new, modernized Control Center. The center is specifically designed to enhance the safety and reliability of pipeline operations. Automated protection systems provide:

- Controller-monitoring, or Supervisory Control And Data Acquisition (SCADA), that identifies operational changes, vapor concentrations, and equipment vibration levels;
 - Computational pipeline monitoring, which keeps track of pressure, temperature and other key data from thousands of points along the pipelines; and
 - Acoustic emission inline inspections, with sensitive acoustic devices that “listen” for leaks from within the pipeline.
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Line 5 Tunnel Project Proposal

Michigan oil and Gas org Enbridge Line 5

Michigan oil and Gas Industry

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